

BACTERIA PARASITIC ON PLANTS IN OHIO¹

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In 1883 Burrill described and named a bacterium as the cause of the fire blight disease of pear. Since this first report of a bacterium pathogenic on plants, additional species have been described and Elliott (1951) enumerates 178 species as plant parasites.

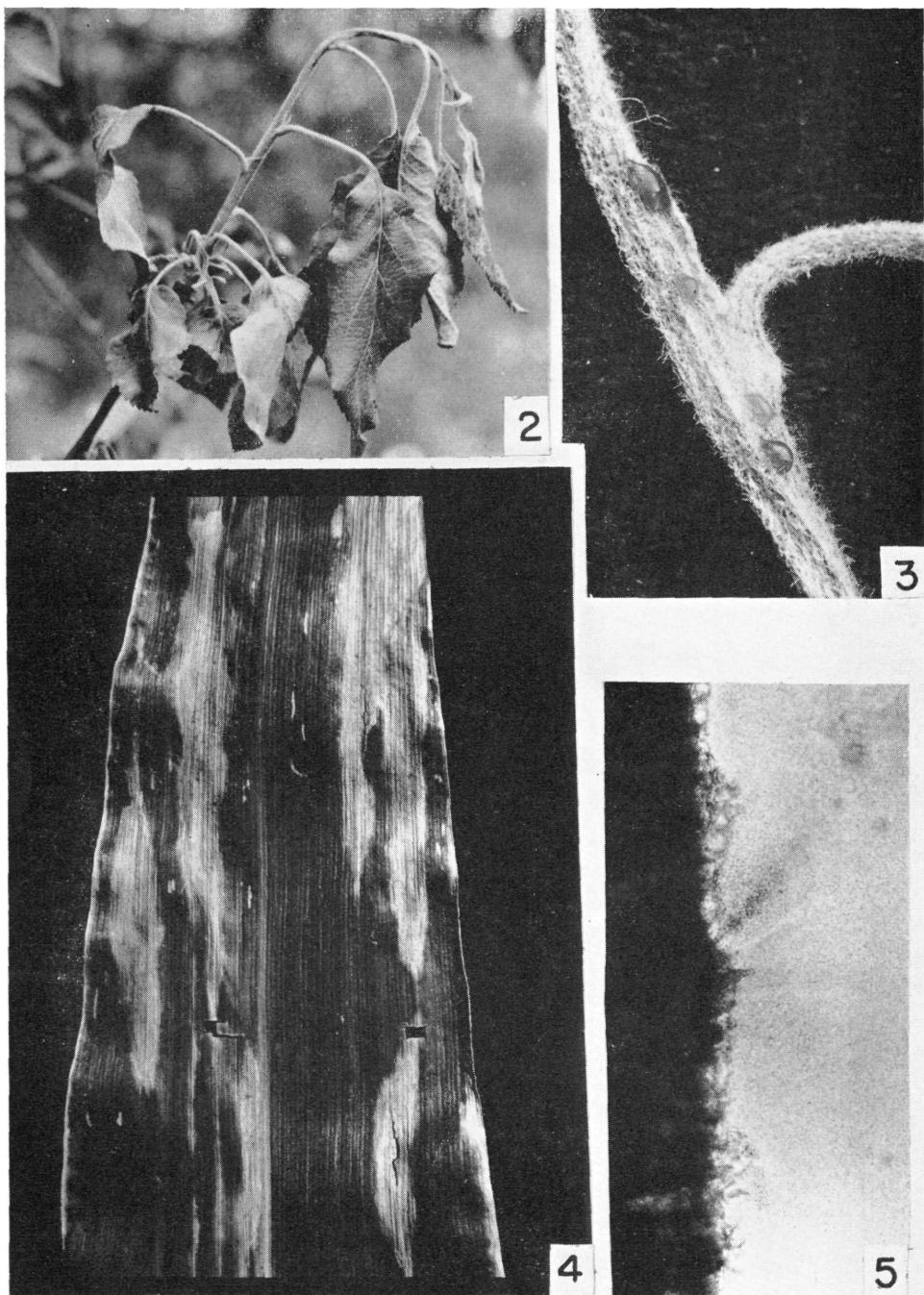
This report includes a list of 49 species and 2 varieties of bacteria parasitic on plants in Ohio. Bacterial plant diseases in Ohio, such as alfalfa wilt, cucurbit wilt, corn leaf blight and wilt (Stewart's disease), fire blight of apple and pear,



FIGURE 1. Bacterial wilt of carnation.

crown gall, soft rot of many vegetables, and carnation wilt have resulted in great losses of these crops in many different years. Some of these bacterial diseases are illustrated in figures 1 to 5. Fire blight of pear has all but eliminated commercial pear production in the state, although recent research by Winter and Young

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2. Twig blight phase of bacterial fire blight of apple.
3. Enlargement of a portion of figure two with bacterial exudate on stem.
4. Bacterial leaf blight (Stewart's disease) of corn; small portions of diseased tissue removed for microscopic examination.
5. Small portion of corn leaf with bacterial exudate clouding the water.

(1953, 1954) and others indicates that this disease may soon be effectively controlled in Ohio.

The following compilation of bacteria parasitic on Ohio plants is based upon specimens in herbaria of The Ohio State University, reports from the available literature, and numerous collections and observations of the author throughout Ohio. The Actinomycetales, sometimes considered to be related to the true bacteria, are included in this compilation.

The genera of bacteria are those recognized by Elliott (1951). The nomenclature for the host plants is from *Gray's Manual of Botany*, 8th edition, 1950 or from Bailey's *Manual of Cultivated Plants*, revised edition, 1949.

Eubacteriales

Agrobacterium rhizogenes (Riker *et al.*) Conn
Pyrus malus L. Hairy root.

Agrobacterium tumefaciens (E. F. Sm. & Towns.) Conn
Beta vulgaris L. Crown gall; stem and/or root gall of all hosts.
Chrysanthemum frutescens L.
C. morifolium (Ramat.) Hemsl.
Euonymus kiautschovicus Loes.
E. fortunei (Turcz.) Hand.-Mazz.
Pelargonium sp.
Prunus sp. (cherry)
P. americana Marsh.
P. persica (L.) Batsch
Pyrus communis L.
P. malus L.
Rosa sp. (cult.)
Rubus sp. (blackberry)
Rubus sp. (dewberry)
R. idaeus L.
R. occidentalis L.
R. ursinus Cham. & Schlecht.
Salix sp.
Vitis sp. (cult.)
Wistaria sp.

Bacterium stewartii E. F. Sm.
Zea mays L. Leaf blight and wilt.

Corynebacterium fascians (Tilford) Dowson
Chrysanthemum morifolium (Ramat.) Hemsl.
Fasciation of all hosts.
Dianthus caryophyllus L.
Gypsophila paniculata L.
Lathyrus odoratus L.
Nicotiana tabacum L.
Pelargonium hortorum Bailey
Petunia hybrida Vilm.

Corynebacterium flaccumfaciens (Hedges) Dowson
Phaseolus vulgaris L. Wilt.

Corynebacterium insidiosum (McCull.) H. L. Jens.
Medicago sativa L. Wilt.

Corynebacterium michiganense (E. F. Sm.) H. L. Jens.
Lycopersicon esculentum Mill. Stem canker and fruit spot.

Corynebacterium sepedonicum (Spieck. & Kotth.) Skapt. & Burkh.
Solanum tuberosum L. Ring-rot of tuber.

Erwinia amylovora (Burr.) Winslow *et al.*
Amelanchier canadensis (L.) Medic. Fire blight of all hosts.
Cotoneaster divaricata Rehd. & Wils.
C. foveolata Rehd. & Wils.
Cydonia oblonga Mill.
Prunus sp. (cherry)
Prunus sp. (plum)
P. serrulata Lindl.
Pyraacantha coccinea Roem.
Pyrus baccata L.
P. communis L.
P. malus L.

Erwinia atroseptica (Van Hall) Jennison
Solanum tuberosum L. Blackleg; stem rot.

Erwinia carotovora (L. R. Jones) Holland
Allium cepa L. Soft rot of all hosts.
Apium graveolens L.
Brassica oleracea L.
B. rapa L.
Cyclamen persicum Mill.
Daucus carota L.
Hyacinthus orientalis L.
Iris germanica L.
Lactuca sativa L.
Lycopersicon esculentum Mill.
Rheum rhabonticum L.
Solanum tuberosum L.
Zantedeschia sp.

- Erwinia chrysanthemi* Burkholder *et al.*
Chrysanthemum morifolium (Ramat.) Hemsl.
 Stem rot and wilt.
- Erwinia dissolvens* (Rosen) Burkh.
Zea mays L. Stalk rot.
- Erwinia tracheiphila* (E. F. Sm.) Holland
Cucumis melo L. Wilt of all hosts.
C. sativus L.
Cucurbita maxima Duchesne
C. pepo L.
- Pseudomonas alliicola* Starr & Burkh.
Allium cepa L. Soft rot.
 Reported, but possibly *Erwinia caratovora*, and not this species.
- Pseudomonas angulata* (Fromme & Murray)
 Holland
Nicotiana tabacum L. Angular leaf spot;
 blackfire.
- Pseudomonas apii* Jagger
Apium graveolens L. Leaf spot.
- Pseudomonas atrofaciens* (McCull.) F. L. Stev.
Triticum aestivum L. Basal glume rot.
- Pseudomonas berberidis* (Thornberry & H. W. Anders.) Stapp
Berberis thunbergii DC. Leaf spot.
- Pseudomonas cannae* (Bryan) Stapp
Canna generalis Bailey Bud rot.
- Pseudomonas caryophylli* Burkh.
Dianthus caryophyllus L. Wilt.
- Pseudomonas coronafaciens* (Elliott) F. L. Stev.
Avena sativa L. Halo blight; leaf spot.
- Pseudomonas coronafaciens atropurpurea*
 (Reddy & Godkin) Stapp
Bromus inermis Leyss. Leaf spot; blight.
- Pseudomonas delphinii* (E. F. Sm.) Stapp
Delphinium sp. Leaf spot; black spot.
- Pseudomonas erodii* Lewis
Pelargonium sp. Leaf spot.
- Pseudomonas glycinea* Coerper
Glycine max (L.) Merr. Leaf spot; blight.
- Pseudomonas lachrymans* (E. F. Sm. & Bryan)
 Carsner
Cucumis sativus L. Angular leaf spot;
 fruit spot.
- Pseudomonas marginata* (McCull.) Stapp
Gladiolus sp. Scab of corms.
- Pseudomonas medicaginis* Sackett
Medicago sativa L. Stem blight.
- Pseudomonas mori* (Boyer & Lambert)
 Stevens
Morus rubra L. Stem and leaf blight.
- Pseudomonas phaseolicola* (Burkh.) Dowson
Phaseolus vulgaris L. Halo blight of leaf,
 stem and pod.
- Pseudomonas pisi* Sackett
Pisum sativum L. Stem, leaf and pod
 blight.
- Pseudomonas rhizoctonia* (R. C. Thomas)
 Burkh.
Lactuca sativa L. Rosette.
- Pseudomonas striaefaciens* (Elliott) Starr &
 Burkh.
Avena sativa L. Stripe blight.
- Pseudomonas syringae* Van Hall
Phaseolus lunatus L. Brown-spot blight.
Trifolium repens L. Leaf spot.
- Pseudomonas tabaci* (Wolf & Foster) Stevens
Glycine max (L.) Merr. Wildfire; leaf spot.
Nicotiana tabacum L. Wildfire; leaf spot.
- Pseudomonas tomato* (Okabe) Alstatt
Lycopersicon esculentum Mill. Speck (fruit,
 stem, and leaf).
- Pseudomonas viburni* (Thornberry & Ander-
 son) Stapp
Viburnum opulus L. Leaf spot.
- Pseudomonas woodsii* (E. F. Sm.) Stevens
Dianthus caryophyllus L. Leaf spot.
- Xanthomonas campestris* (Pam.) Dowson
Brassica oleracea L. Black rot, blight of
 all hosts.
B. juncea (L.) Coss.
B. rapa L.
Raphanus sativus L.

Xanthomonas gummisudans (McCull.) Starr
& Burkh.
Gladiolus sp. Leaf blight.

Xanthomonas hederae (Arn.) Dowson
Hedera helix L. Leaf spot.

Xanthomonas papavericola (Bryan & McWhorter) Dowson
Papaver rhoeas L. Leaf and stem blight.
P. somniferum L.

Xanthomonas pelargonii (N. A. Brown) Starr
& Burkh.
Pelargonium hortorum Bailey Leaf blight.
P. peltatum Ait.

Xanthomonas phaseoli (E. F. Sm.) Dowson
Phaseolus lunatus L. Leaf, stem and pod
blight.
P. vulgaris L.

Xanthomonas phaseoli sojense (Hedges) Starr
& Burkh.
Glycine max (L.) Merr. Pustule; leaf spot.

Xanthomonas pruni (E. F. Sm.) Dowson
Prunus americana Marsh. Leaf spot,
fruit spot and stem canker.
Prunus persica (L.) Batsch

Xanthomonas solanacearum (E. F. Sm.) Dowson
Lycopersicon esculentum Mill. Wilt of
all hosts.
Nicotiana tabacum L.
Solanum tuberosum L.

Xanthomonas translucens (L. R. Jones, A. G.
Johns. & Reddy) Dowson
Hordeum vulgare L. Leaf blight.
Triticum aestivum L. Leaf blight; black
chaff.

Xanthomonas vesicatoria (Doidge) Dowson
Lycopersicon esculentum Mill. Fruit spot;
leaf spot.

Actinomycetales

Streptomyces scabies (Thaxt.) Waksman &
Henrici
Beta vulgaris L. Root scab.
Raphanus sativus L. Root scab.
Solanum tuberosum L. Tuber scab.

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